**Proxima Centauri**

# Prompt:

The closest star to our own, approximately 4.2 light-years away or 25 trillion miles, is the red-dwarf, Proxima Centauri. This low-mass star is about 12% the mass of our Sun, however, a planet has been observed rotating around this red-dwarf star called Proxima c. This exoplanet is approximately 1.3 times the size of earth and appears to have a rocky terrain. Because of its rotation, Proxima c would have approximately 22 Earth days between sunrises and the surface temperature would be approximately -40C. Evidence of both atmospheric and liquid water on the surface has been observed. Because of the closeness of this planet to the Proxima Centauri, the planet is flooded with 400x more radiation than Earth and a solar wind pressure 2000x that experienced on Earth.[[1]](#endnote-1) Due to these factors, the inhabitants of this planet would most likely live underground and would only venture above ground for resources. They would be bipedal humanoids, resembling humans in their anatomy and physiology. However, considering the differences between Proxima c and Earth, there will be adaptations that would ensure their survival on Proxima c.

# Analysis:

Using this information, you should describe and justify one adaptation to the nervous system that this organism would have to inhabit Proxima c. This analysis should include the following:

* Description of the physiology of the human nervous system (using your textbook as a primary information source).
* An explanation of how the environment of Proxima c may affect the functioning of the human nervous system.
* Propose an adaptation to the human nervous system the Proxima c humanoid would have to compensate for the environment.
	+ The adaptation can be based on changes in a human organ to make it work more efficiently on Proxima c or can be an organ that is not found in the human nervous system.
* The proposal should include justification as to why that particular adaption would benefit the humanoid more than any other adaptation to the nervous system.
	+ Justifications should be based on known scientific principles and research.
* Describe how this change or new organ would enable the humanoid to function better on this planet than on Earth.
* Use reliable sources and identify the relevant information used for your analysis and justification.

# Format:

1. Length should be a minimum of 2 pages (down to the bottom of the margin for page 1) and maximum of 3.
2. Analysis should be typed, using 1” margins and double-spacing.
3. Font size must be 12 and should be one of the following: Times New Roman, Arial, or Calibri
4. You must use a minimum of 3 reputable sources in addition to your textbook. Reputable sources include peer reviewed scientific journal articles, accredited websites, or books. Google, Wikipedia, etc. are not acceptable sources. **Remember to cite all sources and cite your textbook.** Citations should be in the APA format, including parenthetical (in-text) citations. Visit the [Purdue Owl Writing Lab](https://owl.english.purdue.edu/) (opens new window) for instructions on proper formatting.

# Submission:

**The paper MUST be submitted via the submission link in Blackboard and must be in word document format**. It will not be accepted if turned in any other way or if it is not in the correct format.

The submission link will check your paper for plagiarism using SafeAssign software. Any paper showing more than 25% plagiarism will be an automatic zero (this means even if you cite your sources, your writing must be in your own words-paraphrase!).

You will be allowed 2 submissions for this assignment (You do not have to submit it more than once, its an option). I will provide general feedback letting you know what areas could be improved upon for a higher grade OR if you need to completely redo the assignment (A redo will count as submission 2).

# Plagiarism:

Plagiarism is using another person's ideas and/or writings without acknowledging that you are doing so and is a serious offense. All students should take all precautions to ensure that no plagiarism, intentional or unintentional, is present in their work.

Plagiarism includes (but is not limited to)

* quoting a source word-for-word without enclosing the material in quotation marks (even if you cite the source).
* summarizing an article by copying from the abstract or critical summary (even if you cite the article).
* paraphrasing closely another's writing (e.g. modifying sentences slightly, but expressing the same ideas with copied phrases) even if you cite the source.
* using another author's points about a topic without acknowledging that you are doing so, and/or reviewing exactly the same studies in the same way (e.g., using a criticism or essay or textbook treatment of a topic as the basic outline for your paper and reviewing only the studies that the author used and making the same criticisms that the author does). It is fine to get a general idea for a topic from a text or other source, but you must then develop and cover the topic in your own way.

Students are expected

* to use their own ideas and their own words in any paper they write.
* to write about material they have read, but express their own understanding and their own comments on it.
* to use occasional quotations but to identify them as quotations.
* to avoid close paraphrasing which is not their own writing. Using more than five (5) consecutive words from the original source without using quotation marks reflects close paraphrasing (i.e. to take an author's writing and to change a few words here and there). This is not acceptable even if the student cites a reference.

# Grading:

The paper will be graded on content, flow, spelling, and grammar. Excess errors will result in point deductions. See grading rubric below.

| **Score Levels** | **Content****(50 pts.)** | **Conventions****(15 pts.)** | **Organization****(15 pts.)** | **Other****(20 pts)** |
| --- | --- | --- | --- | --- |
| **100-90%** | * Is well thought out.
* Reflects application of critical thinking
* Discusses the system fully, including structure and function.
* Discusses the adaptation thoroughly using scientific justification and how it affects the alien in its environment.
* Pulled from a variety of sources
* Is accurate
 | * No spelling, grammatical, or punctuation errors
* High-level use of vocabulary and word choice
 | * Information is clearly focused in an organized and thoughtful manner.
 | * Correctly formatted.
* Reference citations are correct.
* Correct length.
* Turned in on time.
 |
| **89-80%** | * Well thought out.
* Has application of critical thinking that is apparent
* Discusses the system, including structure and function. May lack some detail.
* Discusses the adaptation and how it affects the alien in its environment. May lack some clarity or justification.
* Is pulled from several sources
* Is accurate
 | * Few (1 to 3) spelling, grammatical, or punctuation errors
* Good use of vocabulary and word choice
 | * Information supports the discussion of the chosen topic.
 | * Correctly formatted.
* Reference citations are correct.
* Correct length.
* Turned in on time.
 |
| **79-70%** | * Has application of critical thinking that is apparent
* Discusses the system, including structure and function. Lacks substantial detail.
* Limited discussion of the adaptation and/or lacks detail how it affects the alien in its environment
* Has no clear goal.
* Is pulled from a limited number of sources
 | * Minimal (3 to 5) spelling, grammatical, or punctuation errors
* Low-level use of vocabulary and word choice
 | * Paper has a focus but might stray from it at times.
* Information appears to have a pattern, but the pattern is not consistently carried out in the project.
* Information loosely supports the assignment.
 | * Format is incorrect.
* Incorrect or limited citations.
* Lacking in length.
* Is not turned in on time.
 |
| 69-0% | * Provides inconsistent information.
* Has no apparent application of critical thinking.
* Does not discuss the assigned system and has no clear adaptation.
* Pulled from few sources.
 | * More than 5 spelling, grammatical, or punctuation errors
* Poor use of vocabulary and word choice
 | * Content is unfocused and haphazard.
* Information does not support the student’s claims.
* Information has no apparent pattern or flow.
 | * Is not formatted correctly.
* No citations.
* Lacking in length.
* Does not meet the prescribed length.
* Turned in late.
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1. Information is based on the discovery and analysis of Proxima Centauri b.  Anglada-Escudé G, Amado PJ, Barnes J, Berdiñas ZM, Butler RP, Coleman GA, de la Cueva I, Dreizler S, Endl M, Giesers B, Jeffers SV, Jenkins JS, Jones HR, Kiraga M, Kürster M, López-González MJ, Marvin CJ, Morales N, Morin J, Nelson RP, Ortiz JL, Ofir A, Paardekooper S, Reiners A, Rodríguez E, Rodriguez-López C, Sarmiento LF, Strachan JP, Tsapras Y, Tuomi M, Zechmeister M (25 August 2016). [*"A terrestrial planet candidate in a temperate orbit around Proxima Centauri"*](http://www.eso.org/public/archives/releases/sciencepapers/eso1629/eso1629a.pdf) *(PDF)*. Nature. **536** (7617): 437–440. . [↑](#endnote-ref-1)